

REMARKS

This is a full and timely response to the outstanding nonfinal Office Action mailed December 23, 2003. Reconsideration and allowance of the application and presently pending claims 1-11 and 13-38, as amended, are respectfully requested.

1. Present Status of Patent Application

Upon entry of the amendments in this response, claims 1-38 remain pending in the present application. More specifically, claims 1-11 and 13-27 and 29 are directly amended, while claim 12 is canceled. These amendments are specifically described hereinafter. It is believed that the foregoing amendments and additions add no new matter to the present application.

2. Objection to Drawings Under 37 C.F.R. 1.83(a)

In the Office Action, the drawings were objected to under 37 C.F.R. 1.83(a) as allegedly being improper for failing to show every feature of the invention specified in the claims. Specifically, the Office Action alleges that “both the ‘first and second voltage divider circuits’, as recited in claim 6, must be shown of the feature(s) canceled from the claims.” Applicants respectfully submit that the claimed feature is described on page 13, lines 5-9 of the specification of the current application. Moreover, one skilled in the art would readily understand that a voltage divider circuit could be implemented identically to the voltage divider shown in FIG. 3. Therefore, Applicants submit replacement drawings including FIG. 3A and 3B. FIG. 3A shows a circuit identical to previously submitted drawing FIG. 3, while FIG. 3B shows a similar circuit with a second voltage

divider added per the specification and claims. Applicants respectfully assert that the drawing objection should be withdrawn.

3. Rejection of Claims 1-29 Under 35 U.S.C. §112, ¶2

In the Office Action, claims 1-29 were rejected under 35 U.S.C. §112, ¶2, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

a. Claim 1

The Office Action alleges that

“In claim 1, lines 5-7, the phrase ‘where the drain terminals of the first input transistor and the first complementary transistor and the drain terminals connected with a source terminal of the first discharging transistor’ is not understood. It appears that ‘and the drain terminals’ in line 6 should be changes to –are--. Lines 12-14 are indefinite for similar reasons as lines 5-7”

Claim 1 has been amended to correct the error noted on line 6 and line 13. The suggestion noted in the Office Action was implemented.

The Office Action continues to allege:

“In lines 8 and 15, there is no support for the ‘first reference signal’ and the ‘second reference signal’. As seen in FIG. 3, the ‘first complementary transistor’ and the ‘second complementary transistor’ both receive Vb. Thus, it is deemed misdescriptive to recite Vb as two separate signals.”

Applicants respectfully assert that, in accordance with page 13, lines 9-14 of the specification, there can be multiple bias voltages included within the charge pump. Thus, while Vb is a single signal in one embodiment, it can be multiple signals in other embodiments. Therefore, Applicants respectfully assert that this rejection should be withdrawn.

The Office Action further alleges:

“In lines 16-18, there is no support found for the ‘first and second output nodes’ or the ‘differential pair output signal’. As seen in Figs. 3 and 5, the circuit only has one output providing one signal Vcp.”

Applicants respectfully submit that claim 1 has been amended to remove the differential output language. However, Applicants respectfully assert that both Vcp and Vcn are outputs from the charge pump. Therefore, Applicants respectfully assert that this rejection should be withdrawn.

b. Claim 6

With respect to claim 6, the Office Action alleges that “there is no support for both the ‘first and second voltage divider circuits.’ As seen, Fig. 3 only discloses one such ‘voltage divider circuit’. Applicants respectfully assert that Fig. 3B and page 13, lines 9-14 provide support for the first and second voltage dividers circuits. Therefore, Applicants respectfully assert that this rejection should be withdrawn.

c. Claim 12

With respect to claim 12, the Office Action alleges that “there is no support for the ‘first biasing signal’ and ‘second biasing signal.’” Applicants respectfully assert that claim 12 has been amended to remove the reference to a second biasing circuit. Therefore, Applicants respectfully assert that this rejection should be withdrawn.

d. Claim 23

With respect to claim 23, the Office Action alleges that “there is no antecedent basis for ‘the UP and DW signals.’” Applicants respectfully assert that claim 23 has been amended to replace the reference with the first and second control signals which are

introduced in claim 1. Therefore, Applicants respectfully assert that this rejection should be withdrawn.

4. Response to Rejection of Claims 1, 10-24, 28 and 29 Under 35 U.S.C. §102(b)

Claims 1, 10-24, 28 and 29 were rejected under 35 U.S.C. Section 102(b) as purportedly being anticipated by *Lee* (U.S. Pat. No. 5,889,437). It is well established at law that, for a proper rejection of a claim under 35 U.S.C. §102 as being anticipated based upon a single reference, the reference must disclose, teach, or suggest, either implicitly or explicitly, all elements/features/steps of the claim at issue. *See, e.g., In Re Dow Chemical*, 5 U.S.P.Q.2d 1529, 1531 (Fed. Cir. 1988), and *In re Keller*, 208 U.S.P.Q.2d 871, 881 (C.C.P.A. 1981).

a. Claim 1

Applicants respectfully submit that independent claim 1 is allowable for at least the reason that *Lee* does not teach, disclose, or suggest at least the feature of “where the drain terminals of the first input transistor and the first complementary transistor are connected with a source terminal of the first discharging transistor, and **the first complementary transistor is operable to receive a first reference signal**,” nor “where the drain terminals of the second input transistor and the second complementary transistor are connected with a source terminal of the second discharging transistor, and **the second complementary transistor operable to receive a second reference signal**” as recited in claim 1. That is, one embodiment of the present invention, as recited in claim 1, allows the user to operate a charge pump using first and second control signals at a first and

second input transistor, and a first and second biasing signal at a first and second complementary transistor.

Applicants respectfully assert that *Lee* does not teach, disclose, or suggest at least the feature of “the first complementary transistor is operable to receive a first reference signal,” nor “the second complementary transistor operable to receive a second reference signal,” as recited in claim 1. In particular *Lee* appears to show four control signals, UP, /UP, DN, /DN. One skilled in the art should recognize that these are not biasing signals. The biasing signals in the context of the present invention are used to lower the switching noise of the charge pump output. Merely using the inverted control signal does not lower the switching noise at the output of the charge pump. In stark contrast, Applicants respectfully assert that it appears that *Lee* discloses reducing the effects of power supply noise, as opposed to switching noise. Thus, Applicants respectfully assert that *Lee* does not teach every feature of the claimed method. Thus, for at least these reasons, Applicants respectfully assert that this rejection should be withdrawn.

b. Claims 10, 11, 13, and 14

Furthermore, because independent claim 1 is believed to be allowable over the prior art of record, dependent claims 10, 11, 13, and 14 (which depend from independent claim 1) are allowable as a matter of law for at least the reason that dependent claims 10, 11, 13, and 14 contain all features/elements of independent claim 1. See, e.g., *In re Fine*, 837 F.2d 1071 (Fed. Cir. 1988).

c. Claim 15

Because independent claim 1 is believed to be allowable over the prior art of record, dependent claim 15 (which depends from independent claim 1) is allowable as a matter of

law for at least the reason that dependent claim 15 contains all features/elements of independent claim 1. See, *e.g.*, *In re Fine*, 837 F.2d 1071 (Fed. Cir. 1988). Moreover, it is apparent that *Lee* uses an **RC filter** on the output, rather than a transistor based filter as claimed. Hence, there are other reasons why this claim is allowable.

d. Claims 16-18

Because independent claim 1 is believed to be allowable over the prior art of record, dependent claims 16-18 (which depend from independent claim 1) are allowable as a matter of law for at least the reason that dependent claims 16-18 contain all features/elements of independent claim 1. See, *e.g.*, *In re Fine*, 837 F.2d 1071 (Fed. Cir. 1988).

e. Claim 19

Because independent claim 1 is believed to be allowable over the prior art of record, dependent claim 19 (which depends from independent claim 1) is allowable as a matter of law for at least the reason that dependent claim 19 contains all features/elements of independent claim 1. See, *e.g.*, *In re Fine*, 837 F.2d 1071 (Fed. Cir. 1988). Moreover, it is apparent that *Lee* **does not show a third and fourth charging transistor** coupled to a respective first and second complementary transistor, as claimed. Hence, there are other reasons why this claim is allowable.

f. Claim 20

Because independent claim 1 is believed to be allowable over the prior art of record, dependent claim 20 (which depends from independent claim 1) is allowable as a matter of law for at least the reason that dependent claim 20 contains all features/elements of independent claim 1. See, *e.g.*, *In re Fine*, 837 F.2d 1071 (Fed. Cir. 1988). Moreover, it

is apparent that *Lee* does not teach, disclose, or otherwise suggest a supply voltage of less than 2.5 volts, as claimed. Hence, there are other reasons why this claim is allowable.

g. Claim 21

Because independent claim 1 is believed to be allowable over the prior art of record, dependent claim 21 (which depends from independent claim 1) is allowable as a matter of law for at least the reason that dependent claim 21 contains all features/elements of independent claim 1. See, *e.g.*, *In re Fine*, 837 F.2d 1071 (Fed. Cir. 1988). Moreover, it is apparent that *Lee* does not teach, disclose, or otherwise suggest a supply voltage of less than 1.9 volts, as claimed. Hence, there are other reasons why this claim is allowable.

h. Claim 22

Because independent claim 1 is believed to be allowable over the prior art of record, dependent claim 22 (which depends from independent claim 1) is allowable as a matter of law for at least the reason that dependent claim 22 contains all features/elements of independent claim 1. See, *e.g.*, *In re Fine*, 837 F.2d 1071 (Fed. Cir. 1988).

i. Claim 23

Because independent claim 1 is believed to be allowable over the prior art of record, dependent claim 23 (which depends from independent claim 1) is allowable as a matter of law for at least the reason that dependent claim 23 contains all features/elements of independent claim 1. See, *e.g.*, *In re Fine*, 837 F.2d 1071 (Fed. Cir. 1988). Moreover, it is apparent that *Lee* does not teach, disclose, or otherwise suggest an output which is **substantially isolated from *signal* noise in the UP and DW signals**, as claimed. Hence, there are other reasons why this claim is allowable.

j. Claim 24

Because independent claim 1 is believed to be allowable over the prior art of record, dependent claim 24 (which depends from independent claim 1) is allowable as a matter of law for at least the reason that dependent claim 24 contains all features/elements of independent claim 1. See, e.g., *In re Fine*, 837 F.2d 1071 (Fed. Cir. 1988). Moreover, it is apparent that *Lee* does not teach, disclose, or otherwise suggest an output which is **substantially isolated from switching noise caused by the input transistors**, as claimed. Hence, there are other reasons why this claim is allowable.

k. Claim 28

Applicants respectfully submit that independent claim 28 is allowable for at least the reason that *Lee* does not teach, disclose, or suggest at least the feature of “**providing a biasing signal to first and second complementary transistors** such that the complementary transistors change states between off and on substantially complementary to the state of the respective first and second switching transistors,” as recited in claim 28. That is, one embodiment of the present invention, as recited in claim 28, allows the user to operate a charge pump using a biasing signal at a first and second complementary transistor.

Applicants respectfully assert that *Lee* does not teach, disclose, or suggest at least the feature of “providing a biasing signal to first and second complementary transistors,” as recited in claim 28. In particular *Lee* appears to show four control signals, UP, /UP, DN, /DN connected to the first and second input transistors, and to the first and second complementary transistors. One skilled in the art should recognize that these are not biasing signals. The biasing signals in the context of the present invention are used to

lower the switching noise of the charge pump output. Merely using the inverted control signal does not lower the switching noise at the output of the charge pump. In stark contrast, Applicants respectfully assert that it appears that *Lee* discloses reducing the effects of **power supply noise**, as opposed to switching noise. Thus, Applicants respectfully assert that *Lee* does not teach every feature of the claimed method. Thus, for at least these reasons, Applicants respectfully assert that this rejection should be withdrawn.

1. Claim 29

Because independent claim 28 is believed to be allowable over the prior art of record, dependent claim 29 (which depends from independent claim 28) is allowable as a matter of law for at least the reason that dependent claim 29 contains all features/elements of independent claim 1. See, *e.g.*, *In re Fine*, 837 F.2d 1071 (Fed. Cir. 1988).

5. Response to Rejection of Claims 30, 32 and 38 Under 35 U.S.C. §102(b)

Claims 30, 32 and 38 were rejected under 35 U.S.C. Section 102(b) as purportedly being anticipated by *Kawasaki* (U.S. Pat. No. 5,955,904). It is well established at law that, for a proper rejection of a claim under 35 U.S.C. §102 as being anticipated based upon a single reference, the reference must disclose, teach, or suggest, either implicitly or explicitly, all elements/features/steps of the claim at issue. See, *e.g.*, *In Re Dow Chemical*, 5 U.S.P.Q.2d 1529, 1531 (Fed. Cir. 1988), and *In re Keller*, 208 U.S.P.Q.2d 871, 881 (C.C.P.A. 1981).

a. Claim 30

Applicants respectfully submit that independent claim 28 is allowable for at least the reason that *Kawasaki* does not teach, disclose, or suggest at least the feature of “**a second transistor pair**, comprising a second switching transistor and a second complementary transistor,” nor “**a second switching transistor gate**, associated with the second switching transistor, **coupled to a second control signal, and a second complementary transistor gate**, associated with the second complementary transistor, **being coupled to the constant bias voltage such that the second complementary transistor is indirectly controlled by the second control signal**,” as recited in claim 30.

Applicants respectfully assert that *Kawasaki* does not teach, disclose, or suggest at least the second transistor pair, as recited in claim 30. In particular *Kawasaki* only shows a single transistor pair. Furthermore, the Office Action does not even allege the existence of a second transistor pair. Therefore, Applicants respectfully assert that it is impossible for the Office Action to have met its *prima facie* duty for anticipation. Thus, for at least these reasons, Applicants respectfully assert that this rejection should be withdrawn.

b. Claims 32 and 38

Furthermore, because independent claim 30 is believed to be allowable over the prior art of record, dependent claims 30 and 38 (which depend from independent claim 30) are allowable as a matter of law for at least the reason that dependent claims 32 and 38 contain all features/elements of independent claim 1. See, e.g., *In re Fine*, 837 F.2d 1071 (Fed. Cir. 1988). Moreover, it is apparent that the Office Action has not provided a reasoned rejection of all claims (especially with regard to claim 38) as required by the MPEP. Hence, there are other reasons why this claim is allowable.

6. Response to Rejection of Claims 1-38 Under 35 U.S.C. §102(e)

Claims 1-38 were rejected under 35 U.S.C. Section 102(e) as purportedly being anticipated by *Qu* (U.S. Pat. No. 6,292,061). It is well established at law that, for a proper rejection of a claim under 35 U.S.C. §102 as being anticipated based upon a single reference, the reference must disclose, teach, or suggest, either implicitly or explicitly, all elements/features/steps of the claim at issue. *See, e.g., In Re Dow Chemical*, 5 U.S.P.Q.2d 1529, 1531 (Fed. Cir. 1988), and *In re Keller*, 208 U.S.P.Q.2d 871, 881 (C.C.P.A. 1981).

a. Claim 1

Applicants respectfully submit that independent claim 1 is allowable for at least the reason that *Qu* does not teach, disclose, or suggest at least the feature of “where the drain terminals of the first input transistor and the first complementary transistor are connected with a source terminal of the first discharging transistor, and **the first complementary transistor is operable to receive a first reference signal**,” nor “where the drain terminals of the second input transistor and the second complementary transistor are connected with a source terminal of the second discharging transistor, and **the second complementary transistor operable to receive a second reference signal**” as recited in claim 1. That is, one embodiment of the present invention, as recited in claim 1, allows the user to operate a charge pump using first and second control signals at a first and second input transistor, and a first and second biasing signal at a first and second complementary transistor.

Applicants respectfully assert that *Qu* does not teach, disclose, or suggest at least the features recited above. Moreover, *Qu* is not prior art to this application. Applicants submit herewith an affidavit pursuant to 37 C.F.R. §1.131 (Appendix “A”), in which Applicants swear behind *Qu* by affirming a reduction to practice date prior to the May 1, 2000 filing date of *Qu*. Please find the affidavit enclosed herewith. Thus, for at least these reasons, Applicants respectfully assert that this rejection should be withdrawn.

b. Claims 2-11, and 13-27

Furthermore, because independent claim 1 is believed to be allowable over the prior art of record, dependent claims 2-11 and 13-27 (which depend from independent claim 1) are allowable as a matter of law for at least the reason that dependent claims 2-11 and 13-27 contain all features/elements of independent claim 1. See, *e.g.*, *In re Fine*, 837 F.2d 1071 (Fed. Cir. 1988). Moreover, there remain other reasons why these claims are allowable over *Qu*. Hence, Applicants respectfully assert that this rejection should be withdrawn.

c. Claim 28

Applicants respectfully submit that independent claim 28 is allowable for at least the reason that *Qu* does not teach, disclose, or suggest at least the feature of “**providing a biasing signal to first and second complementary transistors** such that the complementary transistors change states between off and on substantially complementary to the state of the respective first and second switching transistors” as recited in claim 1.

Applicants respectfully assert that *Qu* does not teach, disclose, or suggest at least the features recited above. Moreover, *Qu* is not prior art to this application as indicated in the accompanying rule 1.131 affidavit cited above. Thus, for at least these reasons, Applicants respectfully assert that this rejection should be withdrawn.

d. Claims 29

Furthermore, because independent claim 28 is believed to be allowable over the prior art of record, dependent claim 29 (which depends from independent claim 28) are allowable as a matter of law for at least the reason that dependent claim 29 contains all features/elements of independent claim 28. See, e.g., *In re Fine*, 837 F.2d 1071 (Fed. Cir. 1988). Moreover, there remain other reasons why these claims are allowable over *Qu*. Hence, Applicants respectfully assert that this rejection should be withdrawn.

e. Claim 30

Applicants respectfully submit that independent claim 30 is allowable for at least the reason that *Qu* does not teach, disclose, or suggest at least the feature of “a first switching transistor gate, associated with the first switching transistor, coupled to a first control signal, and **a first complementary transistor gate, associated with the first complementary transistor, being coupled to a constant bias voltage such that the first complementary transistor is indirectly controlled by the first control signal,**” nor “a second switching transistor gate, associated with the second switching transistor, coupled to a second control signal, and **a second complementary transistor gate, associated with the second complementary transistor, being coupled to the constant bias voltage such that the second complementary transistor is indirectly controlled by the second control signal,**” as recited in claim 30.

Applicants respectfully assert that *Qu* does not teach, disclose, or suggest at least the features recited above. Moreover, *Qu* is not prior art to this application as indicated in the accompanying rule 1.131 affidavit cited above. Thus, for at least these reasons, Applicants respectfully assert that this rejection should be withdrawn.

d. Claims 31-38

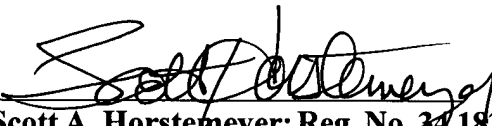
Furthermore, because independent claim 30 is believed to be allowable over the prior art of record, dependent claims 31-38 (which depend from independent claim 30) are allowable as a matter of law for at least the reason that dependent claims 31-38 contain all features/elements of independent claim 30. See, *e.g.*, *In re Fine*, 837 F.2d 1071 (Fed. Cir. 1988). Moreover, there remain other reasons why these claims are allowable over *Qu*. Hence, Applicants respectfully assert that this rejection should be withdrawn.

CONCLUSION

In light of the foregoing amendments and for at least the reasons set forth above, Applicant respectfully asserts that all objections and/or rejections have been traversed, rendered moot, and/or accommodated, and that the now pending claims 1-11 and 13-38 are in condition for allowance. Favorable reconsideration and allowance of the present application and all pending claims are hereby courteously requested. If, in the opinion of the Examiner, a telephonic conference would expedite the examination of this matter, the Examiner is invited to call the undersigned attorney at (770) 933-9500.

Respectfully submitted,

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